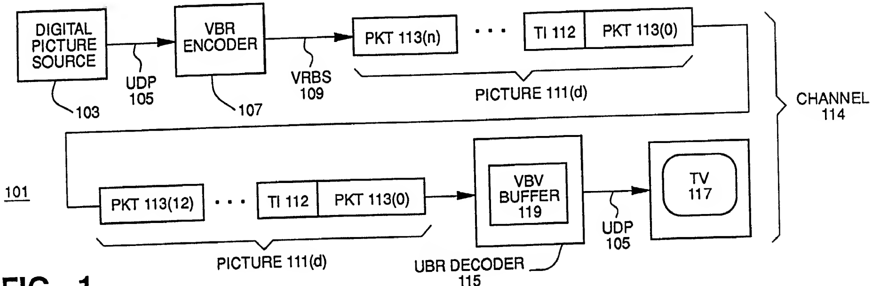


FIG - 1
PRIOR ART

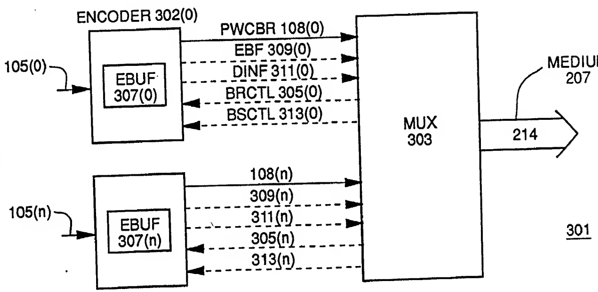


FIG - 3
PRIOR ART

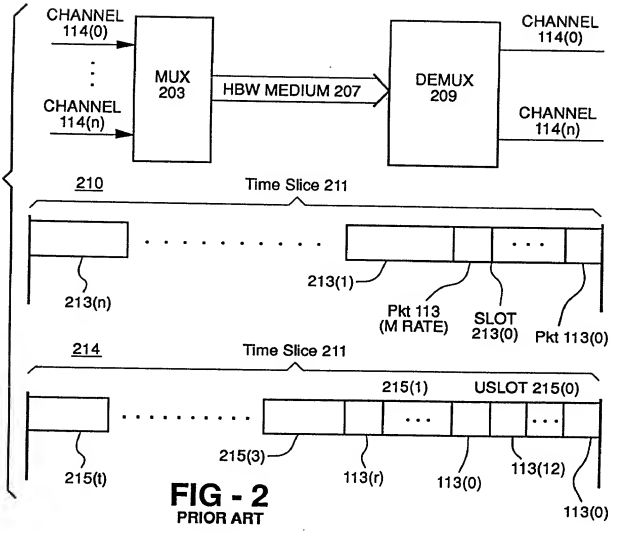


FIG - 2
PRIOR ART

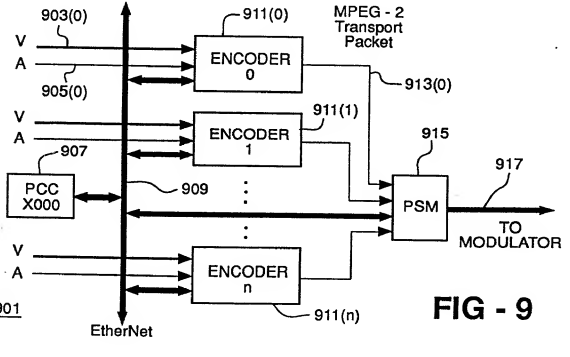
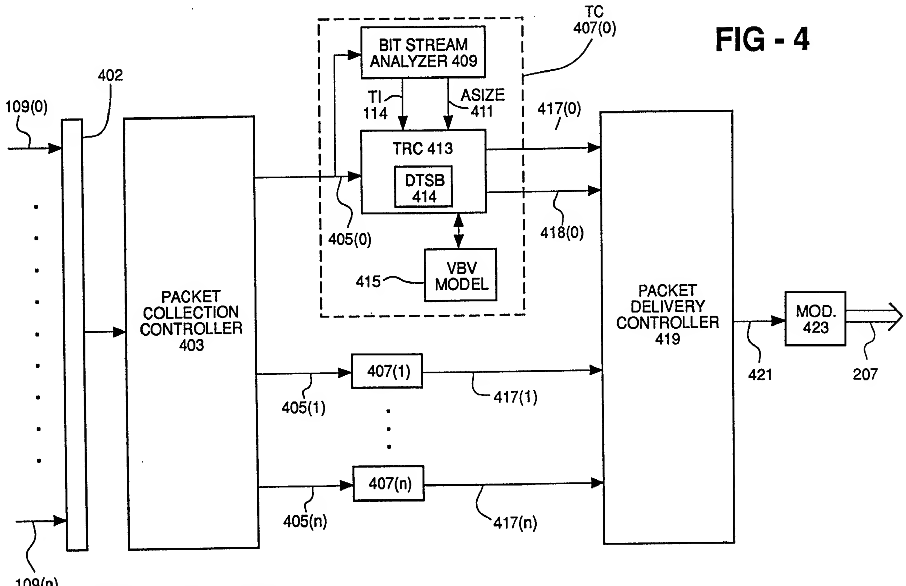


FIG - 9

FIG - 4



STATISTICAL MULTIPLEXER 401

FIG - 5

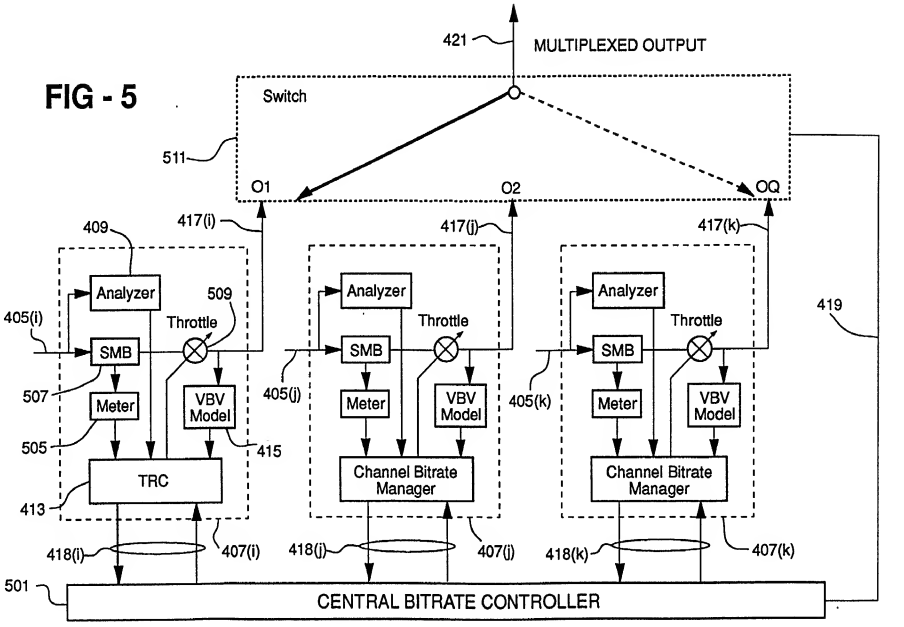
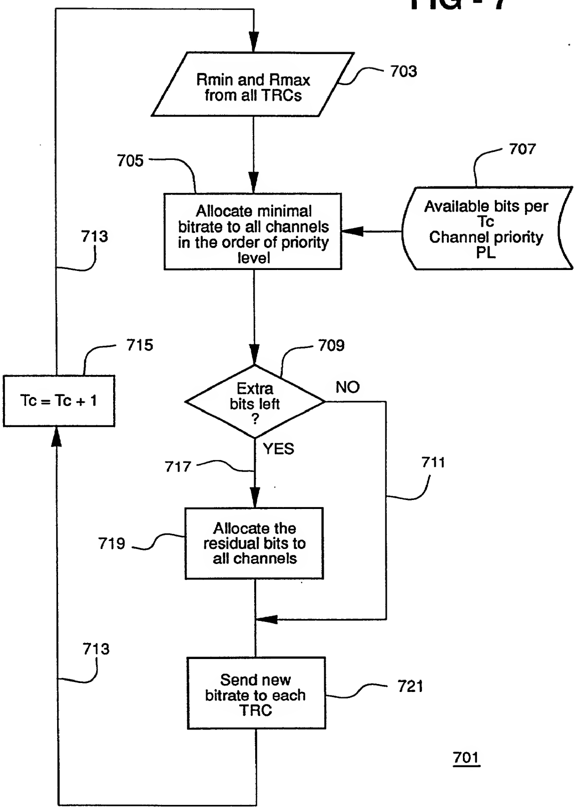


FIG - 6

601

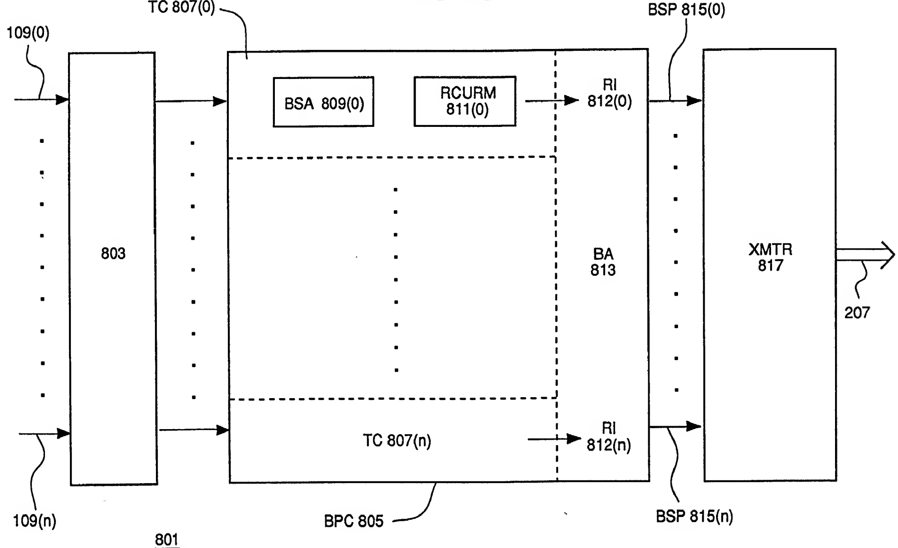
```
/* Initialization of parameters */
q = 0;                                  /* q is the index of coded picture that is leaving SMB */
r = 0;                                  /* r is the index of coded picture that is leaving VBV */
pic_cnt_VBV = 0;                        /* picture counter in VBV buffer */
pic_residue_bits = packet_cnt(0)*188;   /* Initial condition when no bit has left SMB */
Fvbv(0) = 0;                            /* Decoder's VBV fullness is empty at the beginning */
                                                                                        } 603

for (m = 1; ; m++) {                    /* m is the index of each channel transmission time Tc*/

 pic_residual_bits -= R(m)*Tc;          /* update the pic_residual_bits parameter in SMB */
                                        /* Rm is the bitrate for the mth Tc period */
                                                                                        } 605

 /* VBV fullness update */
 if (t < DTS(r)) {           /* The picture r has not be removed from VBF. Here the t is the real
                                   time dervied from PCR */
                                                                                        } 609
  Fvbv(m) += R(m) * Tc;
 }
 else {                      /* picture r has been completely removed from VBV */
  pic_cnt_VBV--;             /* The number of coded picture in VBV should be reduced by 1 */
                                                                                        } 611
  Fvbv (m) += R(m)* Tc - packet_cnt(r)*188;
  r = (r + 1) % NPPmax;
 }                     /* Note: the VBV fullness calculated in this way has the TS and PES overhead.
                          It means the actual fullness of decoder's bit buffer is less than VBV fullness.
                          We don't intend to exclude such overhead since it is rather tedious. Instead
                          we use this overhead as an extra small buffer at the top of decoder's bit
                          buffer to guarantee there is no overflow */
                                                                                        } 607

 if (pic_residual_bits < 0) {           /* last coded picture has been completely moved from
                                           SBM to VBV */

 /* Update the maximum DTS value and picutre counter information in VBV */
 DTS_Vmax = DTS(q);                     /* The maximum DTS value in VBV */
 pic-cnt_VBV ++;                        /* Number of complete coded picture in VBV */
                                                                                        } 615

 /* Update parameters for SMB */
 q = (q + 1) % NPP     ;                /* next q value q has the same value range as NPP    */
 pic_residual_bits += packet_cnt(q)*188;   /* add in the bits amount for the new picture */
                                                                                        } 617
 }
                                                                                        } 613
                                                                                        } 604
```

FIG - 7



701

FIG - 8


TC 807(0)
109(0)
BSA 809(0)
RCURM
811(0)
RI
812(0)
BSP 815(0)
803
BA
813
XMTR
817
207
TC 807(n)
RI
812(n)
109(n)
BPC 805
BSP 815(n)
801

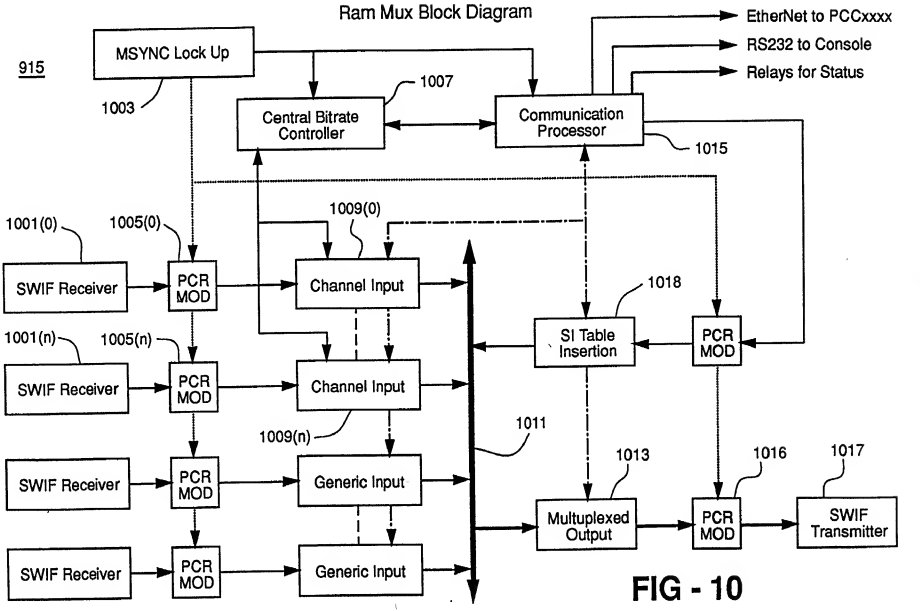


FIG - 10

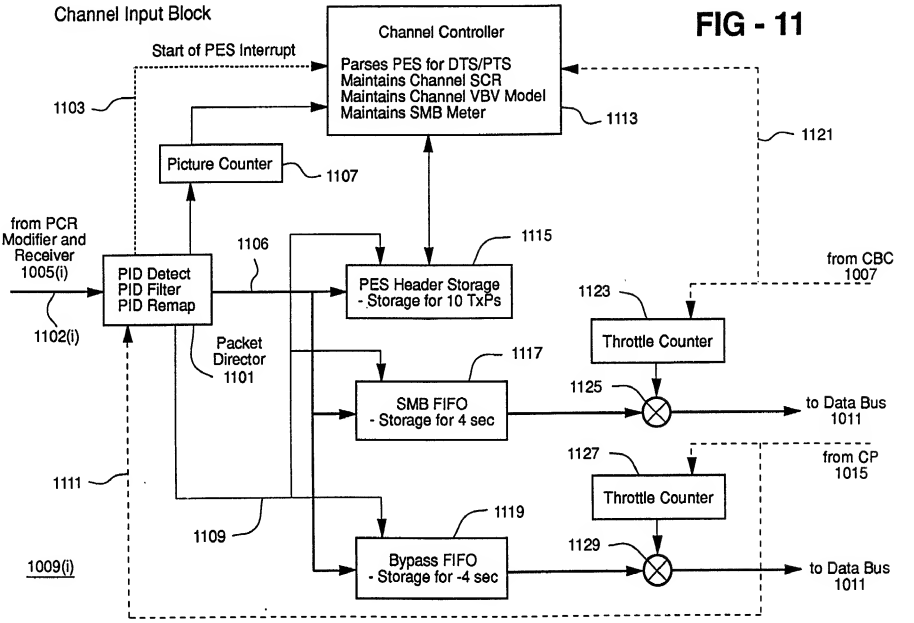


FIG - 11

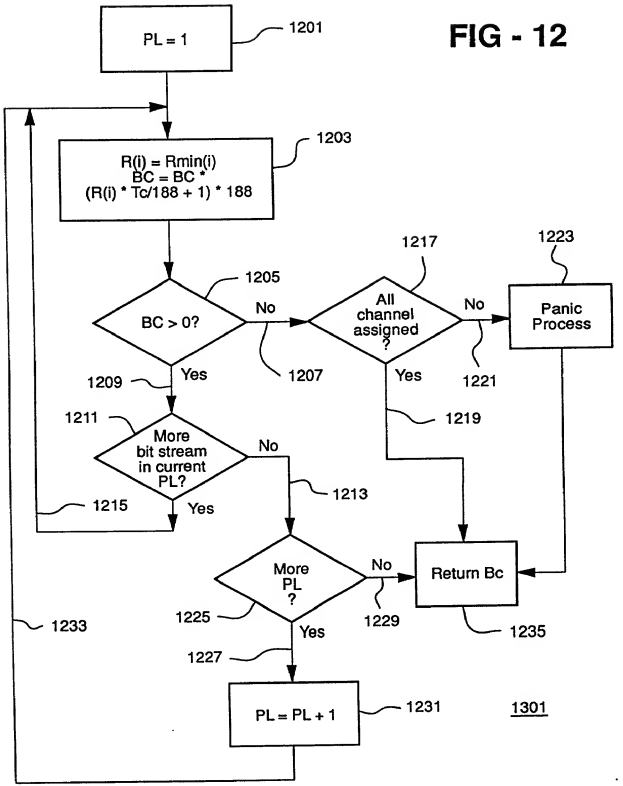

PL = 1
1201
R(i) = Rmin(i)
BC = BC *
(R(i) * Tc/188 + 1) * 188
1203
BC > 0?
1205
No
1207
Yes
1209
All channel assigned ?
1217
No
1221
Yes
1219
Panic Process
1223
More bit stream in current PL?
1211
No
1213
Yes
1215
More PL ?
1225
No
1229
Yes
1227
Return Bc
1235
1233
PL = PL + 1
1231
1301

FIG - 12